

KRUPKOWSKI, A.

Rate of reduction of metal oxides with carbon. Bul Ac Pol  
tech 12 no.10:737-742 '64.

1. Department of Metals of the Institute of Basic Technical  
Problems of the Polish Academy of Sciences, Warsaw. Submitted  
June 13, 1964.

KRUPKOWSKI, Aleksander; MISICLAK, Zbigniew

Analysis of the deformation of rectangular section tensile specimens.  
Archiw hutn 10 no.1:35-79 '65.

1. Department of Metallurgy of the Institute of Basic Technical Problems, Krakow Branch, of the Polish Academy of Sciences, and Institute of Nonferrous Metals, Gliwice. Submitted April 2, 1964.

RECEIVED 1941, 1942, 1943, 1944, 1945, 1946, 1947, 1948, 1949, 1950, 1951, 1952, 1953, 1954, 1955, 1956, 1957, 1958, 1959, 1960, 1961, 1962, 1963, 1964, 1965, 1966, 1967, 1968, 1969, 1970, 1971, 1972, 1973, 1974, 1975, 1976, 1977, 1978, 1979, 1980, 1981, 1982, 1983, 1984, 1985, 1986, 1987, 1988, 1989, 1990, 1991, 1992, 1993, 1994, 1995, 1996, 1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178, 2179, 2180, 2181, 2182, 2183, 2184, 2185, 2186, 2187, 2188, 2189, 2190, 2191, 2192, 2193, 2194, 2195, 2196, 2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205, 2206, 2207, 2208, 2209, 2210, 2211, 2212, 2213, 2214, 2215, 2216, 2217, 2218, 2219, 2220, 2221, 2222, 2223, 2224, 2225, 2226, 2227, 2228, 2229, 2230, 2231, 2232, 2233, 2234, 2235, 2236, 2237, 2238, 2239, 2240, 2241, 2242, 2243, 2244, 2245, 2246, 2247, 2248, 2249, 2250, 2251, 2252, 2253, 2254, 2255, 2256, 2257, 2258, 2259, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2267, 2268, 2269, 2270, 2271, 2272, 2273, 2274, 2275, 2276, 2277, 2278, 2279, 2280, 2281, 2282, 2283, 2284, 2285, 2286, 2287, 2288, 2289, 2290, 2291, 2292, 2293, 2294, 2295, 2296, 2297, 2298, 2299, 2300, 2301, 2302, 2303, 2304, 2305, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2317, 2318, 2319, 2320, 2321, 2322, 2323, 2324, 2325, 2326, 2327, 2328, 2329, 2330, 2331, 2332, 2333, 2334, 2335, 2336, 2337, 2338, 2339, 2340, 2341, 2342, 2343, 2344, 2345, 2346, 2347, 2348, 2349, 2350, 2351, 2352, 2353, 2354, 2355, 2356, 2357, 2358, 2359, 2360, 2361, 2362, 2363, 2364, 2365, 2366, 2367, 2368, 2369, 2370, 2371, 2372, 2373, 2374, 2375, 2376, 2377, 2378, 2379, 2380, 2381, 2382, 2383, 2384, 2385, 2386, 2387, 2388, 2389, 2390, 2391, 2392, 2393, 2394, 2395, 2396, 2397, 2398, 2399, 2400, 2401, 2402, 2403, 2404, 2405, 2406, 2407, 2408, 2409, 2410, 2411, 2412, 2413, 2414, 2415, 2416, 2417, 2418, 2419, 2420, 2421, 2422, 2423, 2424, 2425, 2426, 2427, 2428, 2429, 2430, 2431, 2432, 2433, 2434, 2435, 2436, 2437, 2438, 2439, 2440, 2441, 2442, 2443, 2444, 2445, 2446, 2447, 2448, 2449, 2450, 2451, 2452, 2453, 2454, 2455, 2456, 2457, 2458, 2459, 2460, 2461, 2462, 2463, 2464, 2465, 2466, 2467, 2468, 2469, 2470, 2471, 2472, 2473, 2474, 2475, 2476, 2477, 2478, 2479, 2480, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2489, 2490, 2491, 2492, 2493, 2494, 2495, 2496, 2497, 2498, 2499, 2500, 2501, 2502, 2503, 2504, 2505, 2506, 2507, 2508, 2509, 2510, 2511, 2512, 2513, 2514, 2515, 2516, 2517, 2518, 2519, 2520, 2521, 2522, 2523, 2524, 2525, 2526, 2527, 2528, 2529, 2530, 2531, 2532, 2533, 2534, 2535, 2536, 2537, 2538, 2539, 2540, 2541, 2542, 2543, 2544, 2545, 2546, 2547, 2548, 2549, 2550, 2551, 2552, 2553, 2554, 2555, 2556, 2557, 2558, 2559, 2560, 2561, 2562, 2563, 2564, 2565, 2566, 2567, 2568, 2569, 2570, 2571, 2572, 2573, 2574, 2575, 2576, 2577, 2578, 2579, 2580, 2581, 2582, 2583, 2584, 2585, 2586, 2587, 2588, 2589, 2590, 2591, 2592, 2593, 2594, 2595, 2596, 2597, 2598, 2599, 2600, 2601, 2602, 2603, 2604, 2605, 2606, 2607, 2608, 2609, 2610, 2611, 2612, 2613, 2614, 2615, 2616, 2617, 2618, 2619, 2620, 2621, 2622

Taking small-size specimens in impact testing of steel.  
Przegl mach 24 no.2:43-46 25 Ja '65.

1. Head, Department of Metals of the Institute of Basic Technical Problems of the Polish Academy of Sciences, Warsaw (for Krupkowski). 2. Department of Material Science of the Technical University, Warsaw (for Bombardierki).

KRUPMAN, L.I.

# СЛЮЖОК И СВОЙСТВА СТАЛИ

Д.Ф.Чернов	Исследования влияния электролитического процесса на свойства стали.
М.С.Прохоров	Роль электролитического процесса в коррозии стали.
Л.М.Ирвин	Исследования влияния электролитического процесса на свойства стали.
Ю.А.Иванов	Исследования влияния электролитического процесса на свойства стали.
М.Г.Горюхов	Исследования влияния электролитического процесса на свойства стали.
В.В.Вино	Исследования влияния электролитического процесса на свойства стали.
В.Г.Гуров	Исследования влияния электролитического процесса на свойства стали.
С.А.Иванов	Исследования влияния электролитического процесса на свойства стали.
В.К.Иванов	Исследования влияния электролитического процесса на свойства стали.
А.С.Иванов	Исследования влияния электролитического процесса на свойства стали.
В.Г.Иванов	Исследования влияния электролитического процесса на свойства стали.
С.М.Иванов	Исследования влияния электролитического процесса на свойства стали.
В.М.Иванов	Исследования влияния электролитического процесса на свойства стали.
Ю.Д.Иванов	Исследования влияния электролитического процесса на свойства стали.
В.М.Иванов	Исследования влияния электролитического процесса на свойства стали.
Ю.Д.Иванов	Исследования влияния электролитического процесса на свойства стали.
А.М.Иванов	Исследования влияния электролитического процесса на свойства стали.
В.С.Иванов	Исследования влияния электролитического процесса на свойства стали.
Ю.А.Иванов	Исследования влияния электролитического процесса на свойства стали.
В.П.Иванов	Исследования влияния электролитического процесса на свойства стали.

report submitted for the 5th Physical Chemical Conference on Steel Production, Moscow 30 Jan 1959.

S/148/60/000/010/004/018  
A161/A030

AUTHORS: Druzhinin, V.P.; Iodko, E.A.; Kitayev, A.T.; Krupman, L.I.;  
Tarapay, M.A.; Chevela, L.A.; Yankelovich, Ya.P.

TITLE: Investigation of the Thermal Behaviour of Intermediate Ladles

PERIODICAL: Izvestiya vyzshikh uchebnykh zavedeniy. Chernaya metallurgiya,  
1960, No. 10, pp. 58 - 66

TEXT: The investigation had been carried out to determine the heat losses from metal in intermediate ladles. Small ladles at the New-Tula Metallurgical Plant and large at the imeni Dzerzhinskiy Plant were studied. The small ladles were heated with blast furnace gas burning in an oxygen jet, and the large with coke gas; chromelalumel and platinum-rhodium-platinum thermocouples were inserted into the ladle linings as shown in Fig. 1 and 2; the metal temperature in ladles was measured with platinum-rhodium-platinum and tungsten-molybdenum immersion thermocouples; indicating and recording galvanometers and an ЭПН-04 (EPP-04) writing potentiometer were used. The duration of teeming was 20 - 25 min at the New Tula Plant (NTMZ) and 80 - 120 min at the imeni Dzerzhinskiy Plant. A graph gives the measurement results in a large ladle (Fig. 3) - there is practically no

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S/148/66/000/010/004/012  
A161/A030

# Investigation of the Thermal Behaviour of Intermediate Ladles

heat gradient inside the intermediate ladle, apparently due to a feed of fresh hot metal from the main ladle. The lining temperature on the surface quickly reached the metal temperature; it dropped nearly  $180^{\circ}\text{C}$  during 5 min after the gas heating was stopped before teeming. E.A. Iodko and L.I. Krupman calculated the heating of lining to determine the effect of separate factors. The "working" layer of lining was stated to be 20 - 30 mm in small ladles, and 60 - 80 mm in large, which is less or equal to the usual fireclay lining depth and shows that additional heat insulation of the ladle casings is superfluous. The calculation is included in the article. The formula (13) determines the effect of the heat conductivity of the ladle lining on the drop in metal temperature in the ladle and shows that the relation is in direct proportion. The heat loss by radiation had not been considered. It was concluded that the heat conductivity in fireclay brick layers nearest to the contact surface with metal drops in the teeming process and the first metal portions in the intermediate ladle are cooled by the lining surface, whilst the heat gradient inside the lining has practically no influence. It is therefore proper to heat the lining at a high temperature on the surface ignoring high temperature gradients in the lining below the surface, and not to stop heating the ladle before the start of teeming. Cooling of the first metal

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S/148/60/000/010/004/018  
A161/A030

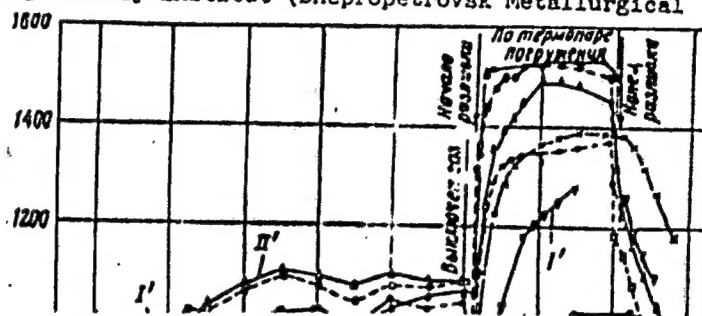
# Investigation of Thermal Behaviour of Intermediate Ladles

portions can be decreased by faster filling. Brick with low heat conductivity on the surface must be used. The following participated in the investigation: Ye.I. Isayev, Yu.N. Yakovlev; V.M. Klippa; S.P. Yefimov; G.L. Doronin; S.L. Sologub; N.A. Rokhlin; F.I. Krasinskiy. V.I. Lapitskiy was in charge. There are 6 figures, 2 tables and 4 Soviet references.

ASSOCIATION: Novo-Tul'skiy metallurgicheskiy zavod (New Tula Metallurgic Plant), Zavod imeni Dzerzhinskogo (imeni Dzerzhinskiy Plant), and Dnepropetrovskiy metallurgicheskiy institut (Dnepropetrovsk Metallurgical Institute)

SUBMITTED: April 21, 1960

Card 3/3



KRUPMAN. L.I.; YAVOYSKIY, V.I.

Kinetics of the dissolution of ferroalloys in steel-pouring  
ladles. Izv. vys. ucheb. zav.; chern. met. 7 no.9:35-42 '64.  
(MIRA 17:6)

1. Donnichermet i Moskovskiy institut stali i splavov.



SOV/137-58-8-16864

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 8, p 92 (USSR)

AUTHOR: Krupnik, I.A.

TITLE: Rational Grooving for Nr-8 and Nr-8a Window-frame Sections  
(Ratsional'naya kalibrovka okonnoramykh profiley Nr 8 i Nr 8a)

PERIODICAL: Tr. Nauchno-tekhn. o-va chernoy metallurgii. Ukr. resp. pravl., 1957, Vol 2, pp 112-118

ABSTRACT: A description is offered of improvement in grooving (G) for window frames rolled on the 260 merchant mill of the im. Komintern Plant. The new G provides for elimination of 2 passes and mechanization of transfer of the strip from the breakdown to the finishing line. In rolling with the new G, the average output in rush periods rose by 12.5%, and the quantity of 2nd-grade output was reduced by 0.4% as compared with the figures for the previous grooving.

1. Steel—Processing 2. Rolling mills—Performance S.G.

Card 1/1

PAVLOVSKIY, G.M., inzh.; KRUPNIK, I.A., inzh.

Efficient sizing of economical window frame sections and the  
mechanization of labor-consuming operations on small-shape mills.  
Stal' 22 no.12:1099-1102 D '62. (MIRA 15:12)

1. Dnepropetrovskiy metallurgicheskiy zavod im. Kominterna.  
(Rolling mills—Equipment and supplies)

KRUPNIK, I.F.

Surgical preparation of the oral cavity for dentures. Nach.  
trudy Kaz. gos. med. inst. 14:463-464 '64. (MIRA 18:9)

1. Kafedra ortopedicheskoy stomatologii (zav. - prof. I.M. Okazan)  
Kazanskogo meditsinskogo Instituta.

KRUPNIK, I.F.

Treatment of trigeminal neuralgia. Stomatologiya 39 no.1:55-57 Ja-7  
'60. (MIRA 14:11)

1. Iz Tatarskoy respublikanskoy stomatologicheskoy polikliniki so  
stantsionarom (glavnyy vrach S.Z.Zalyalyudinova).  
(NEURALGIA, TRIGEMINAL)

KRUPNIK, I.Ye., vrach

Surgical preparation of the oral cavity for the application  
of prosthesis. Vop. obshchei stom. 17:99-100 '64.  
(MIRA 18:11)

BYCHKOV, V.; KRUPNIK, M.

Do you want information? Here it is! Zhil.-kom.khoz. 12 no.7:  
32-33 J1 '62. (MIRA 16:5)

1. Upravlyayushchiy Leningradskoy gorodskoy spravochno-informatsionnoy kontory (for Bychkov). 2. Zaveduyushchiy gazetno-zhurnal'nyy otdelom Leningradskoy gorodskoy spravochno-informatsionnoy kontory (for Krupnik).

(Information services)

1.

USSR/Physics - Electron capture

FD-2205

Card ~~1~~ Pub 146-10/25

Author : Fogel', Ya. M.; Krupnik, L. I.; Safronov, B. G.

Title : Capture of electrons and ionization of protons in hydrogen

Periodical : Zhur. eksp. i teor. fiz. 28, 589-602, May 1955

Abstract : By means of a perfected method of collecting slow particles onto a measuring electrode of a flat condenser the authors measure in the energy interval 12.3 to 36.7 keV the effective cross-sections of capture of one electron and ionization by protons in hydrogen. They compare the obtained results with the data of other works and with the data theoretical calculations. In the passage of protons through hydrogen they observe negative ions of hydrogen in the beam past. They show that for small pressures of the gas in the chamber of collisions the appearance of negative ions of hydrogen in the past beam is connected with the process of capture by a proton of two electrons in the hydrogen molecule. The oriented measurement of the effective cross-section of this process for protons with energy 13, 21, and 31.4 keV indicates that the presence of this process cannot essentially alter the results of the measurement of the effective cross-section of capture of a single electron by the method of collecting slow particles. The authors thank Prof. A.K.Val'ter. 11 refs.

Physico-Tech. Inst, Acad. Sci. Ukr SSR

USSR/Physics Proton passage through foil

FD-2345

Card 1/1 Pub. 146 - 10/34

Author : Fogel', Ya. M.; Safronov, B. G.; and Krupnik, L. I.

Title : Formation of hydrogen negative ions in the passage of protons through thin metal foils

Periodical : Zhur. eksp. i teor. fiz. 28, 711-718, Jun 1955

Abstract : By means of a double mass-spectrometric arrangement the authors determined the ratios of the number of negative hydrogen ions to the number of protons in the beam formed after the passage of protons with energies in the interval 11.5 to 28 kev through thin foils of Be, Al, and Cu. They show that about 10% of the protons incident upon a thin foil of Be can be transformed into negative hydrogen ions. They thank Professor A. K. Val'ter. Five references including one USSR: Ya. M. Fogel' et alii, ibid. 28, 1955.

Institution : Physicotechnical Institute, Academy of Sciences Ukrainian SSR

Submitted : April 3, 1954



KRUPNIK, L. I.

USSR/Physics - Negative ions of oxygen

FD-2874

Card 1/1 Pub. 146 - 11/26

Author : Fogel', Ya. M.; Krupnik, L. I.

Title : Formation of negative oxygen ions during collisions of positive oxygen ions with gas molecules

Periodical : Zhur. eksp. i teor. fiz., 29, August 1955, 209-220

Abstract : By means of a double mass-spectrometer arrangement the authors study the processes of capture of two electrons by positive atomic and molecular ions of oxygen during collisions with molecules of hydrogen, oxygen and nitrogen. They measure the effective cross sections of these processes for oxygen ions with energies from 14 to 41 kev. Their purpose is a more detailed study of the following process:  $A^+ + B \rightarrow A^- + B^{++}$ . The authors thank Professor A. K. Val'ter. Sixteen references: e.g. N. I. Ionov, *ibid.*, 10, 1248, 1940 and 18, 174, 1948; V. I. Veksler and G. N. Shuppe, *Zhur. tekhn. fiz.*, 23, 1573, 1953; N. Massey and E. Burchop, Electronic and Ionic Impact Phenomena, Oxford, 1952.

Institution : Physicotechnical Institute, Academy of Sciences Ukrainian SSR

Submitted : April 3, 1954

SUBJECT USSR / PHYSICS CARD 1 / 2 Pa - 1347  
 AUTHOR FOGEL', JA.M., KRUPNIK, L.I., ANKUDINOV, V.A.  
 TITLE The Production of Negative Hydrogen Ions on the Occasion of the  
 Passage of Positive Hydrogen Ions through a Supersonic-Like Jet  
 of Mercury Vapor.  
 PERIODICAL Zhurn.techn.fiz, 26, fasc.6, 1208-1221 (1956)  
 Issued: 7 / 1956 reviewed: 10 / 1956

Apparatus: An ion accelerator consisting of a high frequent ion source, a focussing lens, and an acceleration tube produced a bundle of positive hydrogen ions. The direction of this bundle was directed by means of an electrostatic corrector. The corrector was located in a chamber which connected the entire apparatus with a pumping device. The bundle of hydrogen ions entered the vapor jet target through an input channel. The trace of the ion bundle impinging upon the input channel of the vapor jet target could be observed on a quartz screen. The chamber of the vapor jet target and its mode of operation are described in detail on the basis of a drawing.

Measuring method: The mercury vapor jet was formed by a LAVAL nozzle, the supersonic part of which had exactly the same profile as the subsonic part. On the occasion of the production of the vapor jet a corresponding equilibrium must be established in the circulation of the mercury. After circulation equilibrium had been established the chamber of the vapor jet target was arranged in a suitable position with respect to the ion bundle. The bundle of hydrogen ions is slightly scattered when passing through the vapor jet target, on which occasion the vapor

Žurn.techn.fiz, 26, fasc.6, 1208-1221 (1956) CARD 2 / 2 PA - 1347

jet emits flashes of light of considerable intensity at the place where scattering occurs.

Experimental results: The optimum conditions for the transformation  $H_1^+ \rightarrow H_1^-$  of positive hydrogen ions into negative ones on the occasion of their passage through the vapor jet target prevail at an energy of  $\sim 25$  keV of the protons and a temperature of  $\sim 160^\circ (3,2 \cdot 10^{15}$  atoms per  $cm^2$ ) in the boiler. The highest value of the current of negative hydrogen ions impinging upon the Faraday cylinder of the analyzer amounted to about 0,3 microamperes at optimum conditions and at  $I_0^+ = 30$  microamperes, which corresponds to a density of 0,2 microamperes. On the occasion of the production of the vapor jet target a certain "evaporation" of Hg atoms from the target as well as turbulence phenomena when leaving the jet occurs. The disturbing and damaging consequences of these phenomena are pointed out. The flow of mercury vapors through the channels of the jet chamber in the here investigated temperature interval does practically not depend on the mode of operation of the jet. On the other hand, the vapor current passing through the channels of the vapor chamber forms only a small part of the quantity of vapor transferred by the current.

INSTITUTION:

*Krupnik, L.I.*

## AUTHOR:

FOGEL', Ya.M., KRUPNIK, L.I., SLABOSPITSKIY, R.P. PA - 3551

## TITLE:

Negative Hydrogen Ion Formation by Passage of Positive Hydrogen Ions through a Supersonic Oil Vapour Stream. (Obrazovaniye otritsatel'nykh ionov vodoroda pri prokhozhenii polozhitel'nykh ionov vodoroda cherez sverkhzvukovuyu struyu parov masel, Russian)

## PERIODICAL:

Zhurnal Tekhn. Fiz., 1957, Vol 27, Nr 5, pp 981 - 987 (U.S.S.R.)

## ABSTRACT:

With reference to a previous work (Zhurnal Tekhn. Fiz., 1956, p 1208) several experiments are described in the present paper which were carried out with a view of realizing a vapor jet target. Oil, which has a low vapor viscosity, was used as working material. For purposes of comparison with a vapor-mercury target experiments were carried out for the determination of the coefficient of the transformation  $H_1^+ \rightarrow H_1^-$  on which occasion various oils were used as target substance. The supersonic outflow of oil vapors from a Laval nozzle was investigated in a system, the section of which is shown here. The results obtained by the investigations make it possible to investigate the transformation of positive hydrogen ions into negative ones in the ultrasonic jet of the oil vapors. Three groups of  $H_1^-$ -ions were observed: 1) such with an energy that corresponded to the full potential drop, 2) and 3) with an energy that corresponded to one half and one third of this value respectively. The experiments showed that a reliable vapor jet

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PA - 3551

Negative Hydrogen Ion Formation by Passage of Positive Hydrogen Ions through a Supersonic Oil Vapor Stream.

target, in the case of which oil with low vapor pressure is used as working substance, can be realized. For butyl-sebacat oil the possibility is shown of producing a vapor jet target with a water-cooled condenser. The coefficient of the transformation of the positive ions into negative ones in a vapor oil target is lower by about one half than that in the vapor-mercury target. Therefore the latter must be preferred for this transformation. (9 illustration and 2 Slavic references)

ASSOCIATION: FTI of the Academy of Science of the U.S.S.R., Charkov  
PRESENTED BY:  
SUBMITTED: 6.11.1956  
AVAILABLE: Library of Congress

Card 2/2

AUTHOR:

POGEL', Ya.M., KRUPNIK, L.I., KOVAL', A.G.,  
SLABOSPITSKIY, R.P.

PA - 3552

TITLE:

Composition of Equilibrium Beam, Formed by Passage of Single  
Positive Oxygen Ions through the Gas Targets. (Sostav ravnovesnogo  
puchka, obrazuyushchegosya pri prokhozhdenii odnozaryadnykh  
polozhitel'nykh ionov kisloroda cherez gazovyye misheni, Russian)  
Zhurnal Tekhn. Fiz., 1957, Vol 27, Nr 5, pp 988 - 996 (U.S.S.R.)

PERIODICAL:

ABSTRACT:

The tests were carried out in order, by means of a recharge of  
positive ions, to obtain a bundle of negative oxygen ions. For this  
purpose the composition of an equilibrium oxygen bundle with an  
energy of 12.3 - 46.2 keV, which is formed during the passage  
of positive oxygen ions with a charge through a flowing gas target  
filled with Ne-, A-, H<sub>2</sub>-, H<sub>2</sub>-, and O<sub>2</sub> gases, is investigated.

There follows the description of the apparatus and of the measuring  
method. The quantities  $f^0$ ,  $f^+$ ,  $f^-$  (relative content of positive  
and negative ions with a charge in the bundle) for an  
equilibrium oxygen bundle with an energy in the above interval in  
the above mentioned gases were investigated. It is shown that in  
the energy interval investigated no great dependence of bundle  
composition on energy could be observed. However, the composition  
of the bundle depends in a high degree on the nature of the gas  
by which the target is filled. There is a particularly high content

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PA - 3552

Composition of Equilibrium Beam, Formed by Passage of Single  
Positive Oxygen Ions through the Gas Targets.

of negative ions in the bundle which was formed in a target filled with hydrogen and argon. For argon the quantity  $f^-$  in the interval of 27 - 33.5 keV amounts to up to 3%. Comparison shows that the content of negative ions in an equilibrium oxygen bundle is considerably greater than that in an equilibrium hydrogen bundle. The investigation carried out here allows the assumption that a flowing target filled with argon might be quite effective with respect to obtaining intense bundles of negative oxygen ions. (2 tables, 6 illustrations, and 7 Slavic references)

ASSOCIATION: FTI of the Academy of Science of the U.S.S.R., Charkov  
PRESENTED BY:  
SUBMITTED: 6.11.1956  
AVAILABLE: Library of Congress

Card 2/2

*Kkupnik, L. I.*

*P. 2, 7*  
9(314)

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80V/2746

Akademiya nauk USSR. Fiziko-tekhnicheskiy institut

Elektrostaticheskiye generatory; sbornik statey (Electrostatic Generators; Collection of Articles) Moscow, Atomizdat, 1959. 255 p. 4,100 copies printed.

Ed. (Title page): A. K. Val'ter, Member, Academy of Sciences, USSR; Ed. (Inside book): Z. D. Andreyenko; Tech. Ed.: N. A. Vlasova.

PURPOSE: This collection of articles may be useful to scientists and engineers working with high-voltage electrostatic generators.

COVERAGE: The authors discuss the construction and operation of a number of electrostatic generators developed in the USSR and describe methods of generating negative hydrogen ~~ions~~. They discuss the operation of accelerating tubes and present methods of stabilizing accelerator voltages. No personalities are mentioned. References appear at the end of some articles.

Card 1/g

3



Electrostatic Generators (Cont.)

80V/2746

TABLE OF CONTENTS:

Val'ter, A. K. Areas of Use and General Principles of Construction of High-voltage Electrostatic Generators 3

The author presents a general discussion of various types of construction of high-voltage electrostatic generators and describes their fields of use. There are no references.

Koval', A. G., L. I. Krupnik, A. D. Timofeyev and Ya. M. Fogel'. Problem of Producing a Beam of Negative Hydrogen Ions by Overcharging Positive Ions in a Cathode Channel of a High-frequency Source 15

The authors discuss a negative hydrogen-ion source based on the production of a negative ion beam by overcharging positive ions in a gas flowing through a cathode channel of a high-frequency source. They also derive expressions for determining amount of negative hydrogen ions in that beam. There are 11 references: 6 Soviet, 4 English and 1 German.

Tsygikalo, A. A. Testing of Accelerating Tubes of a 4 Mev Electrostatic Accelerator Developed by FTI AN UkrSSR 23

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3

Electrostatic Generators (Cont.)

SOV/2746

generators and describe the construction of a magnetic ion source with a cold cathode and a high-frequency source. They also discuss the experimental study of these sources conducted by FTI AN UkrSSR and describe the experimental results. There are 29 references: 9 Soviet, 18 English and 2 German.

Fogel', Ya. M., L. I. Krupnik, A. G. Koval' and A. D. Timofeyev. Source of Negative Hydrogen Ions for an Overcharging Electrostatic Generator

141

The authors describe the construction and operation of three models of negative hydrogen-ion sources developed by FTI AN UkrSSR and present the analysis of their characteristics. The first and the second models were developed in 1955 and 1956 respectively. The third model, built later, is essentially a copy of that developed by Weinman, J. A., and Cameron, J. K., of the University of Wisconsin, U. S. A. In the analysis of characteristics of these models the authors discuss the negative ion spectrum, methods of determining the coefficient of transformation of positive ions into negative, focusing of ion beams, and loss of ion energy. There are 9 references: 3 Soviet, 4 English and 2 German.

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3

KRUPNIK, L. I., SHULIKA, N. G.,

"Plasma Study by Fast Particle Beam Soding,"

report presented at the 6th Intl. Conf. on Ionization Phenomena in Gases,  
Paris, France, 8-13 Jul 63

ACCESSION NR: AT4025305

8/0000/63/000/000/0154/0162

AUTHORS: Konovalov, I. I.; Krupnik, L. I.; Onishchenko, I. N.;  
Shulika, N. G.

TITLE: Use of mass spectrograph to obtain quantitative data on the  
composition of plasmoids

SOURCE: Diagnostika plazmy\* (Plasma diagnostics); sb. statey. Mos-  
cow, Gosatomizdat, 1963, 154-162

TOPIC TAGS: plasmoid, plasma source, mass spectrograph, ionized  
plasma, plasma research, magnetic mirror

ABSTRACT: In order to prevent the polarization of a slow plasma  
and other effects from distorting the results of mass-spectrographic  
analysis of the plasma, an instrument is proposed in which the ion  
beam is drawn out from the analyzed plasma and is simultaneously  
accelerated to 20 keV in the gap of the mass spectrograph. The ener-

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ACCESSION NR: AT4025305

gy spectrum of the plasma ions appears as a corresponding spread over this constant level. The construction of the mass spectrograph is described briefly. The ions were registered with thin-layer emulsions which could be moved in and out of the mass spectrograph without breaking the vacuum. Individual experiments were made to study the density of the image produced on the emulsion as a function of the number of  $H_1$ ,  $H_2$ ,  $H_3$ ,  $He_4$ ,  $C_{12}$ ,  $N_{14}$ , and  $O_{16}$  positive ions with energies from 10 to 20 keV. The apparatus used to calibrate the photographic emulsions is described. Much space is devoted in the article to the various factors influencing the emulsion density. The method described was used to obtain the mass-spectroscopic and energy characteristics of conical and coaxial plasma sources. It is concluded that the described method can be used to extract a great variety of information on the properties and behavior of the plasma. Orig. art. has: 9 figures and 1 table.

ASSOCIATION: None

Card 2/5

ACCESSION NR: AT4025305

SUBMITTED: 19Oct63

DATE ACQ: 16Apr64

ENCL: 02

SUB CODE: ME

NR REF SOV: 001

OTHER: 003

Card 3/5

ACCESSION NR: AT4025305

ENCLOSURE: 01

Ion

H <sub>2</sub>	H <sub>2</sub>	H <sub>2</sub>	O <sup>+</sup>	C <sup>+</sup>	Si <sup>+</sup>	N <sup>+</sup>	Cl <sup>+</sup>	O <sup>+</sup> , N <sup>+</sup> " ap.
%	53	1,5	17	11	5	4	3,7	5

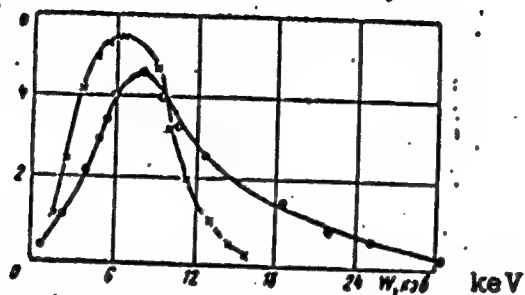
etc

Percentage content of ions in a plasmoid  
from a conical source

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ACCESSION.NR: AT4025305.

ENCLOSURE: 02



Dependence of the number of ions on the energy  
in a plasmoid obtained from a coaxial plasma gun  
o - 15 keV, x - 20 keV

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ACCESSION NR: AT4025311

8/0000/63/000/000/0212/0222

AUTHORS: Krupnik, L. I.; Shulika, N. G.

TITLE: Investigation of plasmoids by means of a beam of fast neutral atoms

SOURCE: Diagnostika plazmy\* (Plasma diagnostics); sb. statey. Moscow, Gosatomizdat, 1963, 212-222

TOPIC TAGS: plasmoid, plasma source, plasma density, discharge plasma, plasma research, plasma interaction

ABSTRACT: An experimental setup was constructed making it possible to probe hydrogen plasmoids by means of a beam of fast neutral hydrogen atoms. The operation of the apparatus is described and the effect of the presence of unionized gas molecules in the plasma and of heavy-ion and heavy-atom impurities in the plasma is analyzed. A Thompson mass spectrometer was used to monitor the purity of the

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ACCESSION NR: AT4025311

plasma (permissible impurity content 20%). The method has been employed to study the density and structure of a plasmoid produced by a conical plasma source. The quantities measured were the attenuation of the neutron beam in the chamber without a discharge, the interaction between the neutral beam and the plasmoid, the interaction between the neutral beam and the frontal part of the plasmoid, the dependence of the plasmoid density on the plasma source voltage, and the effect of the magnetic field on the density of the plasmoid traveling through a large distance. At a density of approximately  $10^{15} \text{ cm}^{-3}$  the attenuation of the sounding beam reached 70--80%. The measurement error does not exceed 20%. Orig. art. has: 7 figures and 1 table.

ASSOCIATION: None

SUBMITTED: 19Oct63

DATE ACQ: 16Apr64

ENCL: 02

SUB CODE: ME

NR REF SOV: 004

OTHER: 001

Card 2/2

ACCESSION NR: AT4025316

S/0000/63/000/000/0256/0262

AUTHORS: Krupnik, L. I.; Shulika, N. G.

TITLE: Use of plasmoscope for visual observation of the behavior of a dense plasma in a longitudinal magnetic field

SOURCE: Diagnostika plazmy\* (Plasma diagnostics); sb. statey. Moscow, Gosatomizdat, 1963, 256-262

TOPIC TAGS: plasmoid, plasma research, plasma density, plasmoid , acceleration, discharge plasma

ABSTRACT: Apparatus (plasmoscope) for visual observation of plasma formations of low density ( $10^{10}$  --  $10^{11}$   $\text{cm}^{-3}$ ), first described by L. A. Artsimovich ("Upravlyayemy\*ye termoyaderny\*ye reaktsii," M., Fizmatgiz, 1961) has been modified slightly to use to observe the behavior of dense plasmoids (up to  $10^{15}$   $\text{cm}^{-3}$ ) moving in a longi-

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ACCESSION NR: AT4025316

tudinal magnetic field. The optimal plasmoscope parameters necessary for the purpose are established and the dependence of the diameter of the dense part of the plasmoid on the magnetic field applied along the plasmoid propagation axis was determined by photography. It was found originally that in magnetic fields with  $H > 800$  Oe the plasmoid remained practically constant in diameter. However, a recheck on the result, by reducing the number of grounded grids and thereby increasing the density of the plasma reaching the scintillator, showed that the diameter decreases with decreasing number of attenuating grids. In an attempt to explain this fact it is suggested that with decreasing number of grids a larger current charges the plasmoscope capacitor before the bulk of the plasma reaches it. This hypothesis was checked experimentally by using different capacitors in the plasmoscope supply circuit. The results confirm the assumptions that the plasmoid increases from its "head" towards its "tail" and predicts the possibility of determining the variation of the plasmoid cross section along its length by apply-

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ACCESSION NR: AT4025316

ing short-duration voltage pulses to the plasmoscope. Orig. art.  
has: 6 figures.

ASSOCIATION: None

SUBMITTED: 19Oct63

DATE ACQ: 16Apr64

ENCL: 02

SUB CODE: ME

NR REF SOV: 000

OTHER: 000

Card 3/5

ACCESSION NR: AT4025316

ENCLOSURE: 01

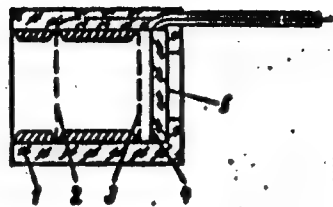


Diagram of plasmascope

1 - Plexiglas container, 2 - first grid,  
3 - second grid, 4 - scintillator side coated  
with thin aluminum layer, 5 - plate of  
plastic scintillator

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ACCESSION NR: AT4025316

ENCLOSURE: 02



Diagram of experimental set-up

- 1 - conical plasma source, 2 - diaphragm,  
3 - plasmascope

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ACCESSION NR: AT4036079

8/2781/63/000/003/0353/0357

AUTHORS: Krupnik, L. I.; Shulika, N. G.

TITLE: Study of the blackening of photographic plates under the influence of a beam of positive ions

SOURCE: Konferentsiya po fizike plazmy\* i problemam upravlyayemogo termoyadernogo sinteza. 3d, Kharkov, 1962. Fizika plazmy\* i problemy\* upravlyayemogo termoyadernogo sinteza (Plasma physics and problems of controlled thermonuclear synthesis); doklady\* konferentsii, . no. 3, Kiev, Izd-vo AN UkrSSR, 1963, 353-357

TOPIC TAGS: plasmoid, plasma research, photographic emulsion, ionized plasma, ion beam, ion source

ABSTRACT: The blackening of photographic plates as a function of the number of  $H_1^+$ ,  $H_2^+$ ,  $H_3^+$ ,  $He_4^+$ ,  $C_{12}^+$ ,  $N_{14}^+$ , and  $O_{16}^+$  ions with energies from

Cord 1/4



ACCESSION NR: AT4036079

8/2781/63/000/003/0353/0357

AUTHORS: Krupnik, L. I.; Shulika, N. G.

TITLE: Study of the blackening of photographic plates under the influence of a beam of positive ions

SOURCE: Konferentsiya po fizike plazmy\* i problemam upravlyayemogo termoyadernogo sinteza. 3d, Kharkov, 1962. Fizika plazmy\* i problemy\* upravlyayemogo termoyadernogo sinteza (Plasma physics and problems of controlled thermonuclear synthesis); doklady\* konferentsii, no. 3, Kiev, Izd-vo AN UkrSSR, 1963, 353-357

TOPIC TAGS: plasmoid, plasma research, photographic emulsion, ionized plasma, ion beam, ion source

ABSTRACT: The blackening of photographic plates as a function of the number of  $H_1^+$ ,  $H_2^+$ ,  $H_3^+$ ,  $He_4^+$ ,  $C_{12}^+$ ,  $N_{14}^+$ , and  $O_{16}^+$  ions with energies from

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ACCESSION NR: AT4036079

10 to 20 keV was investigated in view of the possible use of photographic emulsions to determine qualitatively the composition of plas-  
moids. The ions were produced with a high-frequency ion source  
focused, mass analyzed, collimated, and cleared of neutral particles  
after which they struck the photographic plate. The measurement  
procedure and the apparatus are described. The plates were developed  
and the density measured with a microphotometer. All the ions pro-  
duced saturation, indicating that all grains of the emulsion reacted  
with the ions and a further increase of the charge does not increase  
the intensity. The photographic blackening also decreases uniformly  
with the increasing mass. The errors of the procedure are discussed  
briefly. Orig. art. has: 7 figures and 2 formulas.

ASSOCIATION: None

SUBMITTED: 00

DATE ACQ: 21May64

ENCL: 02

SUB CODE: EM

NR REF SOV: 000

OTHER: 000

Card 2/4

ACCESSION NR: AT4036079

ENCLOSURE: 01

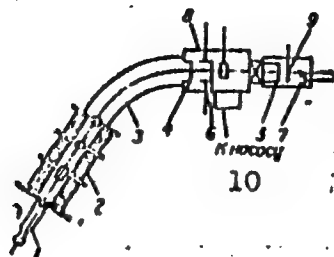
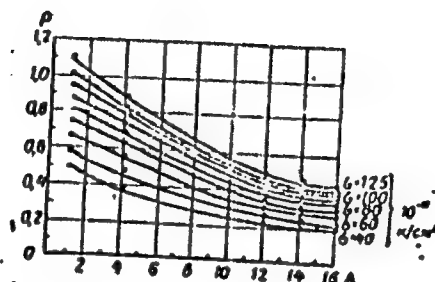
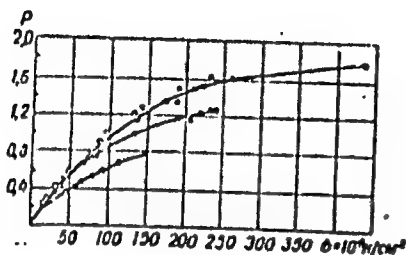


Diagram of set-up: 1 - hf ion source, 2 - three electrode lens, 3 - monochromator, 4 - diaphragm, 5 - diaphragm, 6 - condenser, 7 - Faraday trap, 8 - vacuum chamber, 9 - nuclear emulsion, 10 - to pump.

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ACCESSION NR: AT4036079

ENCLOSURE:..C2



Left - typical blackening vs. charge per unit area ( o -  $H_1^+$ ,  
• -  $H_2^+$ , Δ -  $H_3^+$  at 20 keV). Right - dependence of blackening on  
the mass (the parameter is the charge per unit area)

Card 4/4

L 49246-65 ENT(1)/EPF(n)-2/EKG(m)/EPA(w)-2 Pz-6/Po-4/Pab-10/P-4 IJP(c) WH/AT

ACCESSION NR: AP5010809

UR/0057/65/035/004/0711/0716

AUTHOR: Krupnik, L.I.; Shulika, N.G.; Demchenko, P.A.

59  
B

TITLE: Development of a fast particle beam plasma probing technique for investigating plasma bursts *2*

SOURCE: Zhurnal tekhnicheskoy fiziki, v. 35, no. 4, 1965, 711-716

TOPIC TAGS: plasma diagnostics, hydrogen plasma, ion beam, atom beam, ionization, particle density

ABSTRACT: The authors have previously determined the particle density in highly ionized plasma bursts by measuring the decrease in the intensity of a hydrogen atom beam occasioned by its traversing the plasma (Sb. "Dagnostika plazmy". Gostionizdat, p.212, 1963; Doklad na IV Mezhdunarodnoy konferentsii po ionizatsionnym yavleniyam v gazakh, iyul', Parizh, 1963 /Report at the 4-th International Conference on Ionization Phenomena in Gases, Paris, July 1963/). In the present paper they extend this method to the case in which the degree of ionization is not known, is not necessarily large, and is to be determined along with the density. The requisite additional information is obtained by employing two particle beams

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ACCESSION NR: AP5010809

(or a single composite beam) either of atoms of different energies or of atoms and ions. Measurements of hydrogen plasma bursts were performed with the apparatus described in detail in the references cited above. In one set of experiments, hydrogen plasma bursts from a conical plasma gun were traversed by a beam containing hydrogen atoms and hydrogen ions. The beam was obtained from a proton beam by charge exchange collisions in a gas chamber and the separate constituents were detected by the method of V.V. Afrosimov et al. (ZhTF, 30, 1470, 1960, involving production of secondary electrons on targets, plastic scintillators, and photomultipliers. After passage of the highly ionized head of the burst, the ionization fell to 20%, then increased to a second maximum of 30% just before the region of maximum density, and subsequently decreased monotonically. The particle density was also measured with an electrostatic probe; the probe and particle measurements were in good agreement. Experiments were also performed with beams of 1 and 12 keV hydrogen atoms. These experiments are said also to have given satisfactory results, but they are only briefly described. Probe beams containing both atoms and ions are preferable to those containing only atoms of different energies, but they cannot be employed when the plasma burst moves in a magnetic field. The cross sections for all the interaction processes between the probe-beam and plasma particles must be known; this condition is met when a hydro-

Card 2/3

L 49246-65

ACCESSION NR: AP5010809

gen plasma is probed with a hydrogen beam. Orig. art. has: 4 formulas, 4 figures, and 1 table.

ASSOCIATION: None

SUBMITTED: 20 Apr 64

ENCL: 00

SUB CODE: ME

NR REF ROW: 006

OTHER: 001

Card 3/3

L 43912-66 EWT(1) IJP(c) AT/GD

ACC NR: AT6020405

(N)

SOURCE CODE: UR/0000/65/000/000/0084/0089

AUTHOR: Krupnik, L. I.; Shulika, N. G.; Demchenko, P. A.

60

ORG: none

3/

2/

B+1

TITLE: Behavior of plasmoids in the longitudinal magnetic field

SOURCE: AN UkrSSR. Issledovaniye plazmennykh sgustkov (Study of plasma clusters). Kiev, Naukova dumka, 1965, 84-89

TOPIC TAGS: plasmoid, plasma magnetic field, plasma diagnostics, plasma injection, plasma density, magnetic mirror

ABSTRACT: The authors report attempts to investigate the entrance of a plasmoid into an axially-symmetrical magnetic field by sounding the plasma with beams. The sounding was carried out with beams of fast particles, using a procedure described earlier (in: Diagnostika plazmy, Gostomizdat, 1963, p. 212). The experimental setup was also described in detail in the earlier paper. The plasmoid was produced with a conical source with pulsed injection of gas (Yu. S. Azovskiy et al., ZhTF v. 34, 5, 841, 1964). The magnetic field could be made homogeneous or inhomogeneous by using two or one solenoids. Measurement of the distance between the movable solenoid producing the magnetic field and the point of fast-particle sounding made it possible to determine the influence of the magnetic field on the plasmoid properties. The results show that in a field up to 2500 Oe a plasmoid with charged-particle density  $10^{14} \text{ cm}^{-3}$ , bounded by a diaphragm 15 mm in dia., follows strictly the magnetic force

Card 1/2



L 43912-66

ACC NR: AT6020405

0

lines, and passes unchanged through the magnetic field gradient. No reflection of the plasmoid from the magnetic mirror or change in the density of the plasmoid were observed under these conditions. Orig. art. has: 5 figures.

SUB CODE: 20/ SUBM DATE: 11Nov65/ ORIG REF: 007

Card 2/2 pb

L 43797-66 EWT(1) IJP(c) QD/AT

ACC NR: AT6020417

(N)

SOURCE CODE: UR/0000/65/000/000/0188/0195

AUTHOR: Krupnik, L. I.; Shulika, N. G.; Demchenko, P. A.

7/

B+/

ORG: none

TITLE: Determination of density, degree of ionization, and electron temperature of plasmoids by the method of fast particle beams

SOURCE: AN UkrSSR. Issledovaniya plazmennyykh sguatkov (Study of plasma clusters). Kiev, Naukovo dumka, 1965, 188-195

TOPIC TAGS: plasmoid, plasma gun, plasma electron temperature, *ELECTRON DENSITY*

ABSTRACT: The parameters of plasma injected from a conical gun were investigated using neutral hydrogen and proton beams of various energies. This type of probing makes it possible to determine electron density, temperature and the degree of ionization as functions of time. Electron temperature measurements were supplemented by a spectroscopic method. These measurements helped to establish a gun operation regime producing impurity-free plasma with good repeatability from shot to shot. The absorption of the heavy particle beam was found to be quite useful since the plasma dynamics could be followed with approximately 30% accuracy without any significant interaction with the plasma. The measurements show that the plasma ejected from the gun has a forward part consisting of pure hydrogen with about 90% ionization. Its electron tempera-

Card 1/2

ACC NR: AT6020417

ture reached some 60 to 80 ev. The tail part of the plasma carried large amounts of impurities (70%) and its temperature was quite low. The density of the forward part was about  $10^{13} \text{ cm}^{-3}$  and that of the tail part about ten times higher. Typical time variation of these quantities is shown. Orig. art. has: 1 table, 3 figures, 4 formulas.

SUB CODE: 20/

SUBM DATE: 11Nov65/

ORIG REF: 007/

OTH REF: 002

Card 2/2 *plw*

L 43796-66 EWT(1) IJP(c) OD/AT

ACC NR: AT6020418

(N)

SOURCE CODE: UR/0000/65/000/000/0195/0203

AUTHOR: Krupnik, L. I.; Shulika, M. G.; Demchenko, P. A.

ORG: none

TITLE: Impingement of plasmoids on a metallic surface

SOURCE: AN UkrSSR. Issledovaniye plazmennyykh sgustkov (Study of plasma clusters).  
Kiev, Naukovo dumka, 1965, 195-203

TOPIC TAGS: plasmoid, plasma diagnostics, plasma generator, plasma density, *METAL SURFACE*

ABSTRACT: Various aspects of the problem of colliding plasmas with metallic walls were studied using a conical plasma generator injecting plasma into a channel where diagnostic measurements on plasma properties were made. At the end of the channel, a reflecting metallic surface was set at 45°. The reflected plasma diagnostics were made in the vessel behind the reflector set at 90° to the incident plasma channel. The main tools for plasma analysis was the mass spectrograph and neutral atom beam. It has been shown that in the region of 1 to 2 cm from the reflector the plasma density increased by about a factor of 10. It is not clear what mechanism is responsible for such density increase. The mean energy of the particles in the investigated plasma changes by an insignificant amount with some addition of impurities from the reflecting surface. This is in contrast to work of A. A. Kalaykov, et al (ZhTF, 1964, 34,

Card 1/2

L 43796-66

ACC NR: AT6020418

8, 1423) where large peaks were found in the energy spectrum of reflected particles. The impurity composition was determined for several voltage regimes in the plasma generator giving the most efficient operation of the reflector. The coefficient of reflection was not studied in detail; its value (ratio of reflected number of particles to that of incident) is about 1:10. Orig. art. has: 5 figures.

SUB CODE: 20/

SUBM DATE: 11Nov65/

ORIG REF: 006

Card 2/2 *pls*

TON, D.S.; RECHMEDILOV, N.S.; KRUPNIK, M.Ya.

Economic efficiency of the organization of production combines.

Tekst. prom. 25 no.2:18-21 P '65.

(MIRA 18:4)

1. Zaveduyushchiy sektorom Instituta ekonomiki AN Moldavskoy SSR (for Ton). 2. Glavnyy ekonomist firmy "Styaua Kochiya" (for Rechmedilov). 3. Zamestitel' nachal'nika planovogo otzela firmy "Styaua Kochiya" (for Krupnik).

KRUPNIK, M.Ya., inzh.

Design of long settling tanks. Izv. vys. ucheb. zav.; energ.  
6 no.6:115-119 Je '63. (MIRA 16:11)

1. Leningradskiy politekhnicheskoy institut imeni M.I. Kalinina.  
Predstavlena kafedroy gidravliki.

KRUPNIK, M.Ya.

Evaluation of knit fabric utilization in the cutting and  
preparation workshops. Tekst. prom. 24 no.11:43-44 N '64.

(MIRA 17:12)

1. Zamestitel' nachal'nika planovogo otdela Mashinetskoy  
trikotazhnoy firmy "Styama Roshkiya".



KHUPNIK, N.Ya.

Multidimensional singular integral equations. Usp. mat. nauk  
20 no.6: 119-123 N-D '65. (MIRA 18:12)

1. Submitted May 12, 1964.

KRUPNIK, N. Ya.

Multidimensional singular operators in spaces of basic and  
generalized functions. Uch. zap. Kish. un. 70:39-48 '61  
(MIRA 18:1)

KRUPNIK, N.Ya.

Multidimensional singular operators in spaces of fundamental and generalized functions. Dokl. AN SSSR 157 no.1:41-44 J1 '64.

1. Kishinevskiy gosudarstvennyy universitet. Predstavleno akademikom N.I. Mikhelishvili.

KRUPNIK, Tadeusz

Structure of elementary sulfur recuperated from ammonia waste sorption lyes in the light of x-ray studies. Przem chem 41 no.5:260-261. My '62.

1. Katedra Inzynierii Chemicznej, Politechnika, Gdansk.

KRUPNIKOV, A. I.

Cutting Machines

Mechanization of pipe cutting.

Elek. sta. 23 no. 3:51-52 Mr '52

Inzh.

Monthly List of Russian Accessions, Library of  
Congress, July 1952. Unclassified

GREBEL'SKIY, Petr Khaimovich; REZNIK, Moyer Khaimovich; ~~KRUPNIKOV,~~  
~~B.V.,~~ inzh., retsenzent; RIMMER, A.I., inzh., retsenzent;  
LISICHEV, B.N., nauchnyy red.; LISOK, E.I., red.; FRUMKIN,  
P.S., tekhn. red.

[Fitting out operations in shipbuilding] Sudovye dostroech-  
nye raboty. Leningrad, Sudpromgiz, 1962. 213 p.

(MIRA 15:8)

(Shipbuilding)

56-34-4-14/60

**AUTHORS:** Al'tshuler, L. V., Krupnikov, K. K., Ledenev, B. N., Zhuchikhin, V. I., Brazhnik, M. I.

**TITLE:** The Dynamic Compressibility and the Equation of State of Iron at High Pressures (Dinamicheskaya szhinayenost' i uravneniye sostoyaniya pri vysokikh davleniyakh)

**PERIODICAL:** Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1958, Vol. 34, Nr 4, pp. 874 - 885 (USSR)

**ABSTRACT:** This work discusses 2 methods for the description of the dynamic compressibility of materials, which are based upon the determination of the kinematic parameters - the propagation velocity and the mass velocity of the material behind the front. The measurement of wave velocities by means of donors being mounted in the path of the shock wave is relatively simple. In contrast to this the immediate observation of the mass velocity is impossible in most of the cases. The authors worked out 2 methods for the complex determination of the kinematic parameters of the wave, namely the "method of repelling" and the

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The Dynamic Compressibility and the Equation of State of 56-34-4-14/60  
Iron at High Pressures

"method of slowing down". In the method of repelling the propagation of a strong crack is investigated, which forms on the occasion of the reflection of a detonation wave at an elastic obstacle. The experimentally measurable quantities on this occasion are the wave velocity  $D$  and the velocity  $W$  of the displacement of the free surface of the obstacle on the initial part of the trajectory.  $W$  is approximately equal to the double mass velocity of the substance behind the wave front. The velocity of motion  $W$  is obtained by the material of the obstacle under the action of two different processes, namely of the shock-like transition from the state  $P_0 = 0; v_0$  into the state  $P_1; v_1$ , and of the subsequent isentropic expansion in the oncoming relief wave. The second paragraph deals with the method of the investigation and with the experimental technique. The third paragraph reports on the dynamic adiabatic line of the iron. A table gives the parameters of all experimentally stated figurative points of the adiabatic curve of the shock in iron. Within the whole investigated domain of the mass velocities

Card 2/4



The Dynamic Compressibility and the Equation of State of Iron at High Pressures 56-34-4-14/60

from  $U = 1,0$  to  $U = 5,17$  km/sec the linear relationship  $D = 3,80 + 1,58 U$  is valid for the propagation velocity  $D$  of the shock wave. In the next paragraph the compression of iron at the temperature zero is computed and in the last paragraph the curve of the compressibility of iron is extrapolated to the domain of relatively low degrees of compression. The developed method allows to fix the dynamic adiabatic curve of iron with different initial density within the interval of pressures of from  $4,10^5$  to  $5,10^6$  atmospheres. The dynamic adiabatic curve of porous iron with decreased initial density is in the diagram pressure - density considerably higher than the adiabatic of the compact material which speaks for the great influence of the thermic component in the shock-like compression. The authors derived an empirical equation of state of iron and ascertained the course of the curve of the cold compressibility unto the densities  $\rho = 1,790$ . This work was carried out on the initiative by Ya.B.Zel'dovich. The authors also mention the cooperation of a number of other authors.

Card 3/4

The Dynamic Compressibility and the Equation of State  
of Iron at High Pressures

56-34-4-14/60

There are 10 figures, 3 tables, and 14 references, 6 of which  
are Soviet.

SUBMITTED: December 28, 1957

1. Iron--Mechanical properties

Card 4/4

56-34-4-15/60

**AUTHORS:** Al' tshuler, L. V., Krupnikov, K. K., Brazhnik, M. I.

**TITLE:** The Dynamic Compressibility of Metals Under Pressures of From 400 000 to 4 Million Atmospheres (Dinamicheskaya szhimayemost' metallov pri davleniyakh ot chetyrekhsot tysyach do chetyrekh millionov atmosfer)

**PERIODICAL:** Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1958, Vol. 34, Nr 4, pp. 886 - 893 (USSR)

**ABSTRACT:** This paper reports on the bases of a method for the experimental determination of the dynamic compressibility of copper, zinc, cadmium, tin, silver, gold, lead, and bismuth at pressures of from 400 000 to 4 000 000 atmospheres. In the case of all these materials the knowledge of only one dynamic adiabatic curve is not sufficient for the determination of the equations of state, which establish a relation between the pressure and the temperature and density. Yet the data on the shock-like compressibility at pressures of hundred thousands and millions of atmospheres are very valuable for the verification of the theoretical

Card 1/3

The Dynamic Compressibility of Metals Under  
Pressures of From 400 000 to 4 Million Atmospheres

56-34-4-15/60

ideas on the behaviour of matter on such conditions. The authors investigate the transition of a shock wave with known amplitude from the medium A into the substance B. The experimental method is discussed in detail. A plane shock wave caused by an explosion passed an iron shield to which samples of iron and of the materials to be investigated were pressed. The 3 series of experiments differ in the pressure of the shock wave in the shield. The propagation velocities of the shock wave obtained in these experiments are composed in a table. There are also given the parameters of the shock waves in the iron shields and the initial densities  $\rho_0$  of the investigated samples. In all investigated metals, with the exception of tin, the dependence of the displacement velocity  $D$  of the wave front in the undisturbed medium on the velocity  $U$  of matter behind the wave front for  $U > 1$  km/sec is sufficiently exactly approximated by linear relationships of the kind  $D = C_0 + \lambda U$ . The degree of compression in a certain way depends on the initial atom volume. In the case of increasing pressures the wave velocity and the mean modulus of the shock-

Card 2/3

The Dynamic Compressibility of Metals Under  
Pressures of From 400 000 to 4 Million Atmospheres

56-34-4-15/60

-like compression increase for many times. The authors thank A.N.Kolesnikova, S.N.Pokrovskiy, A.L.Zhiryakov, M.M.Pavlovskiy and V.P.Drakin for their cooperation in this work. There are 5 figures, 5 tables and 3 references, 2 of which are Soviet.

SUBMITTED: December 28, 1957

1. Metals--Mechanical properties

Card 3/3

18.8100 26.2312 18.1152

S/056/62/042/003/006/049  
B104/B102

AUTHORS: Krupnikov, K. K., Brazhnik, M. I., Krupnikova, V. P.

TITLE: Shock compression of porous tungsten

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 42,  
no. 3, 1962, 675 - 685

TEXT: The wave velocity  $D$  and the mass velocity  $U$  of a shock compression in tungsten of different porosities were determined by a method introduced by L. V. Al'tshuler et al. (ZhETF, 34, 886, 1950). Shock waves of given intensities were transmitted to tungsten samples by means of metals whose dynamic compressibility was known. Three test series (Table 1) were made. The shock adiabats,  $P(\sigma)$ , for porous samples showed a negative slope at pressures  $< 0.5 \cdot 10^6$  atm. With increasing shock wave amplitude, the negative slope decreased and became positive. This peculiar course of the adiabat was explained by the variation of the effective Grüneisen coefficient with the degree of compression and heating. An essential contribution is made by the increase in electronic heat capacity. The slope  $(dq/d\sigma)_H$  and  $\gamma$  were calculated (Table 3).

Card 1/2

Shock compression of porous tungsten

S/056/62/042/003/006/049  
B104/B102

A. S. Kompaneyets and S. P. D'yakov are mentioned. L. V. Al'tshuler, Ya. B. Zel'dovich, Ye. I. Zababakhin are thanked for interest, S. N. Pokrovskiy, A. N. Kolesnikova, A. A. Zhiryakov, A. V. Blinov, and T. T. Lisovitskaya for assistance. There are 6 figures, 4 tables, and 11 references: 8 Soviet and 3 non-Soviet. The three references to English-language publications read as follows: R. G. McQueen, S. P. Marsh. J. Appl. Phys., 31, 1253, 1960; R. Latter, Phys. Rev., 99, 1854, 1955; T. R. Waite, R. S. Craig, W. E. Wallace, Phys. Rev., 104, 1240, 1956.

SUBMITTED: November 1, 1961

Table.1. Experimental results.

Legend: (1) Test series, (2) material transmitting the shock waves to the tungsten, and  $P_s$  in dynes/cm<sup>2</sup>, the pressure exerted by the shock wave; (3) degree of porosity,  $m = \rho_0/\rho_{00}$ , where  $\rho_0$  = density of compact tungsten,  $\rho_{00}$  = density of porous tungsten, (4) D and U, km/sec, (5) pressure  $10^{-12}$  P, dynes/cm<sup>2</sup>, (6) relative density,  $\sigma = \rho/\rho_0$ .

Card 2/3

KRUPNIKOV, K. K.

AID Nr. 971-19 20 May

IMPACT COMPRESSIBILITY OF Ti, Mo, Ta, and Fe (USSR)

Krupnikov, K. K., A. A. Bakanova, M. I. Brazhnik, and R. F. Trunin. IN:  
Akademiya nauk SSSR. Doklady, v. 148, no. 6, 21 Feb 1963, 1302-1305.  
S/020/63/148/006/012/023

The impact compressibility of Ti, Mo, and Ta at pressures up to  $5 \cdot 10^6$  atm, and of Fe at a pressure of  $\sim 9 \cdot 10^6$  atm, has been determined. The pressure was generated by shooting aluminum plates at a velocity of 5600 m/sec or steel pins at a velocity of 8640 or 9100 m/sec onto test specimens 3-4 mm thick which were shielded by an Al or Fe shield. The pressure and the degree of compression were calculated from the experimentally determined velocity  $D$  of the shock wave. The state of impact compression and the values of pressure  $P$  and mass velocity behind the front of shock wave  $U$  were determined graphically. The compression density  $\rho$  was calculated from the equation  $\rho_0 D = \rho(D-U)$ , where  $\rho_0$  is the initial density. From the obtained shock-wave parameters the adiabatic curves for shock waves and zero isotherms were calculated and plotted.

[MS]

Card 1/1



SERGEYEVA, V.; KRUPNIKOVA, A.

Effect of certain substances on the solubility of naphthalene  
in methanol. Zhur.ob.khim. 31 no.8:2119-2150 Ag '61.

(MIRA 14:8)

1. Kazakhskiy gosudarstvennyy universitet imeni S.M. Kirova.  
(Naphthalene) (Methanol) (Solubility)

KRUPNIKOVA, A. M., LEIKINA, E. M., GRABOVSKAYA, K. S., LIVKINA, E. G.

Treatment of scarlet fever with aspergillin and gramicidin.  
Vopr. pediat. 18:3, 1950. p. 38-41

1. Of the Department of Microbiology (Head--Docent N. N. Kozarev)  
and of the Children's Infectious Diseases Clinic (Head--Prof.  
Ye. Ye. Granat), Khabarovsk Medical Institute (Director -- Docent  
S. K. Nechepayev), Khabarovsk.

GLML 19, 5, Nov., 1950

SHAPIRO, S.Ya.; ZHDANOV, I.S.; BARYSHNIKOVA, A.I.; KIRILOVA, R.Ya.;  
CHAPOVSKAYA, L.G.; KUPNIKOVA, A.M.; PODKOVA, N.I.

Analysis of an outbreak of paratyphoid B caused by infected chicken  
egg products. Zhur. mikrobiol. epid i immun. 31 no.6:26-31 Je '60.  
(MIA 13:8)

1. Iz Khabarovskogo instituta epidemiologii i gigiyeny, Meditsinskogo  
instituta i Gorodskoy sanitarno-epidemiologicheskoy stantsii.  
(Khabarovsk—PARATYPHOID FEVER)  
(FOOD CONTAMINATION)

KRUPNIKOVA, A.M.; ZHDANOV, I.S.; KIREYEVA, R.Ya.

Data from a study of tick-borne typhus in Khabarovsk Territory.  
Sov.med. 25 no.1:39-44 Ja '61. (MIRA 14:3)

1. Iz Khabarovskogo instituta epidemiologii i mikrobiologii (direktor  
A.M.Krupnikova) i kliniki infektsionnykh bolezney (zav. - dotent  
S.Ye.Shapiro) Khabarovskogo meditsinskogo instituta (direktor -  
prof. S.K.Nechepayev).

(Khabarovsk Territory—TYPHUS)

KRUPNIKOVA, M. O.

Skarre, O. K. and Krupnikova, M. O. - "The isotopic composition of mineral waters,"  
Nauch. zapiski (Dnepropetr. gos. un-t), Vol XXXIII, 1948, p. 223-25

SO: U-5240, 17, Dec. 53, (Istoria 'Zhurnal 'nykh Statey, No. 25, 1949).

LMITRIYEVA, N.N.; KRUPNIKOVA, T.A.

Increase in auxin-oxidase enzyme activity by purification with  
gel Sephadex G75. Dokl. AN SSSR 164 no.1:205-207 S '65.  
(MIRA 18:9)

1. Botanicheskiy institut im. V.L. Komarova AN SSSR.  
Submitted September 29, 1964.

1. BRILLYANT, V. A., KRUPNIKOVA, T. A.
2. USSR (600)
4. Photosynthesis
7. Various conditions for the course of photosynthetic reactions in the dark. Dokl. AN SSSR, 86, No. 6, 1952
9. Monthly List of Russian Accessions, Library of Congress, February 1953, Unclassified.

SHKOL'NIK, M.Ya.; KRUPNIKOVA, T.A.; DMITRIYEVA, N.N.

Effect of boron deficiency on some aspects of auxin metabolism in  
sunflowers and corn. Fiziol. rast. 11 no.2:188-194 Mr-Apr '64.  
(MIRA 17:4)

1. Komarov Botanical Institute, U.S.S.R. Academy of Sciences,  
Leningrad.



BRILLIANT, V.A.; KRUPNIKOVA, T.A.

Effect of certain poisons on the gas metabolism of water plants in continuous and intermittent light. Trudy Bot.inst. Ser.4 no.9:77-99 '53.  
(MLHA 6:6)

1. Botanicheskiy institut imeni V.L. Komarova akademii nauk SSSR.  
(Plants, Effect of poisons on) (Photosynthesis) (Plants, Gases in)

18.8100 26,2312 18.1152

8/056/62/042/003/006/049  
B104/B102

AUTHORS: Krupnikov, K. K., Brazhnik, M. I., Krupnikova, V. P.

TITLE: Shock compression of porous tungsten

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 42,  
no. 3, 1962, 675 - 685

TEXT: The wave velocity  $D$  and the mass velocity  $U$  of a shock compression in tungsten of different porosities were determined by a method introduced by L. V. Al'tshuler et al. (ZhETF, 34, 886, 1958). Shock waves of given intensities were transmitted to tungsten samples by means of metals whose dynamic compressibility was known. Three test series (Table 1) were made. The shock adiabats,  $P(\sigma)$ , for porous samples showed a negative slope at pressures  $< 0.5 \cdot 10^6$  atm. With increasing shock wave amplitude, the negative slope decreased and became positive. This peculiar course of the adiabat was explained by the variation of the effective Grüneisen coefficient with the degree of compression and heating. An essential contribution is made by the increase in electronic heat capacity. The slope  $(dq/d\sigma)_H$  and  $\gamma$  were calculated (Table 3).

Card 1/2

Shock compression of porous tungsten

S/056/62/042/003/006/049  
B104/B102

A. S. Kompaneyets and S. P. D'yakov are mentioned. L. V. Al'tshuler, Ya. B. Zel'dovich, Ye. I. Zababakhin are thanked for interest, S. N. Pokrovskiy, A. N. Kolesnikova, A. A. Zhiryakov, A. V. Blinov, and T. T. Lisovitskaya for assistance. There are 6 figures, 4 tables, and 11 references: 8 Soviet and 3 non-Soviet. The three references to English-language publications read as follows: R. G. McQueen, S. P. Marsh, J. Appl. Phys., 31, 1253, 1960; R. Latter, Phys. Rev., 99, 1854, 1955; T. R. Waite, R. S. Craig, W. E. Wallace, Phys. Rev., 104, 1240, 1956.

SUBMITTED: November 1, 1961

Table.1. Experimental results.

Legend: (1) Test series, (2) material transmitting the shock waves to the tungsten, and  $P_s$  in dynes/cm<sup>2</sup>, the pressure exerted by the shock wave; (3) degree of porosity,  $m = \rho_0/\rho_{00}$ , where  $\rho_0$  = density of compact tungsten,  $\rho_{00}$  = density of porous tungsten, (4) D and U, km/sec, (5) pressure  $10^{-12}$  P, dynes/cm<sup>2</sup>, (6) relative density,  $\sigma = \rho/\rho_0$ .

Card 2/3

*Krupnikova, Ye.I.*

USSR/Solid State Physics - Structure of Deformation Materials.

E-9

Abs Jour : Referat Zhur - Fizika, No 5, 1957, 11877

Author : Layner, D.I., Krupnikova, Ye.I.

Inst : -

Title : Mechanism of the Influence of Small Additives to the Deformation of Recrystallization Textures in Metals and Alloys.

Orig Pub : Izv. AN SSSR, ser. fiz., 1956, 20, No 6, 693-694

Abstract : A study is made of the influence of additives on the formation of deformation and recrystallization textures in aluminum, copper, and nickel, as well as in "melchior." Small additives do not influence the formation of the deformation texture, but effect substantially the recrystallization texture. Addition of silicon to a melchior, of antimony to copper, of calcium to nickel, and of zinc to aluminum, in definite concentrations, leads to a metallic walled surface in the recrystallized state with disoriented

Card 1/2

USSR/Solid State Physics - Structure of Deformation Materials.

E-9

Abs Jour : Ref Zhur - Fizika, No 5, 1957, 11877

structure and, consequently, with an absence of anisotropy of mechanical properties. The mechanism of the influence of these impurities is connected with their adsorption on definite faces of the recrystallization nuclei, in accordance with the Curie-Gibbs-Wulf principle. In order to exert a favorable, the additives should be surface-active with respect to the basic metal, isomorphous with the base and soluble in it. It is also necessary to observe a structural correspondence between the additive and the base.

Card 2/2

137-58-4-8188

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 4, p 263 (USSR)

AUTHORS: Layner, D.I., Krupnikova-Perlina, Ye.I.

TITLE: Effects of Adding Nickel, Silver, Lead, and Antimony on the Anisotropy of the Mechanical Properties of Recrystallized High-purity Copper (Vliyaniye dobavok nikelya, serebra, svintsa i sur'my na anizotropiyu mekhanicheskikh svoystv rekristallizovannoy medi vysokoy chistoty)

PERIODICAL: Tr. Gos. n.-i. i proyekt. in-ta po obrabotke tsvetn. met., 1957, Nr 16, pp 24-26

ABSTRACT: The roles of various additives in the formation of recrystallization textures are studied. With this object, the anisotropy of the elongation of Cu per unit length (AE) and that of its alloys with 0.29% Ni, 0.32% Pb, 0.42% Sb, and 0.12% Ag, cold-rolled to 96% deformation and annealed in vacuum at 700°C for 1 hour, was determined. Specimens for testing were cut at angles of 0, 45, and 90° to the direction of rolling. It is indicated that under these conditions Cu had a strong AE, related to the presence of recrystallization texture. It was established that additions of Sb and Ag markedly reduce the anisotropy, Sb virtually

Card 1/2

137-58-4-8188

Effects of Adding Nickel, (cont.)

destroying it. This is explained by the fact that the surface tension of Sb differs most strongly from that of Cu and Ag. Surface-tension-reducing Pb, which is insoluble in Cu, and soluble Ni, which exhibits the same surface tension as Cu, did not affect the AE. The results adduced are explained by the capacity of the surface-tension-reducing additives going into solid solution to lead to disorientation of the structure of the metal on annealing.

- A.B.
1. Copper--Mechanical properties--Effects of nickel 2. Copper--Mechanical properties--Effects of silver 3. Copper--Mechanical properties--Effects of lead 4. Copper--Mechanical properties--Effects of antimony

Card 2/2

137-58-4-8189

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 4, p 263 (USSR)

AUTHORS: Layner, D. I., Krupnikova-Perlina, Ye. I.

TITLE: An Investigation of the Effect of Certain Surface-tension-reducing Additives on the Formation of Recrystallization Texture in High-purity Nickel (Issledovaniye vliyaniya nekotorykh poverkhnost-noaktivnykh primesey na obrazovaniye tekstury rekristallizatsii nikelya vysokoy chistoty)

PERIODICAL: Tr. Gos. n. -i. i proyekt. in-ta po obrabotke tsvetn. met., 1957, Nr 16, pp 27-30

ABSTRACT: Qualitative investigation of the recrystallization texture of 99.99% pure Ni and its binary alloys with 0.21% Al, 0.12% Ti, 0.38% Th, and 2.76% W was performed by X-ray. The surface tension of these additives is lower than that of Ni. The specimens, cold-rolled to 86% deformation, were annealed in vacuum at 800°C for 1 hour. Pure Ni was found to have a recrystallization texture. Al, Ti, and W, forming solid solutions with Ni, facilitated formation of a disoriented structure, in confirmation of theoretical hypotheses drawn earlier. In view of the low solubility of Th, an addition thereof did not result in total elimina-

Card 1/2



137-58-4-8189

An Investigation of the Effect (cont.)

tion of the recrystallization texture. See RzhMet, 1958, Nr 4, abstract 8188.

A.B.

1. Nickel--Structural analysis--Surface tension factors
2. Nickel alloys
- Structural analysis--Surface tension factors
3. X-ray analysis--Applications

Card 2/2

137-58-4-8416

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 4, p 300 (USSR)

AUTHORS: Layner, D. I., ~~Krupnikova-Perlina, Ye. I.~~

TITLE: The Effect of a Change in Rolling Direction on the Mechanical Properties of Strip Made of BrOF 6.5-0.4 Bronze (O vliyanii peremeny napravleniya prokata na mekhanicheskiye svoystva polos iz bronzy BrOF 6.5-0.4)

PERIODICAL: Tr. Gos. n.-i. i proyekt. in-ta po obrabotke tsvetn. met., 1957, Nr 17, pp 34-37

ABSTRACT: Rolling with 90° turns has no significant effect on the degree of anisotropy of mechanical properties, but crushes the grains without significantly affecting their direction. Grain size is not related to the degree of anisotropy of the mechanical properties of BrOF. The laws characteristic of the deformation of certain face-centered metals cannot be applied mechanically to the deformation of BrOF.

N.G.

1. Bronze--Mechanical properties--Processing effects
2. Bronze--Deformation

Card 1/1



LAYNER, D.I.; KRUPNIKOVA-PERLINA, Ye.I.

Mechanism of texture formation in metal and alloy recrystallization.  
Fiz. met. i metalloved. 9 no. 4:542-544 Ap '60. (MIRA 14:5)

1. Institut "Giprotsvetmetobrabotka."  
(Metallography) (Crystallization)

LAYNER, D.I.; KRUPNIKOVA-PERLINA, Ye.I.

Kinetics of texture formation during the recrystallization of copper  
and 80/20 "melchior". Trudy Giprotstvetmetobrabotka no.18:278-292  
'60. (MIRA 13:10)

(Copper alloys—Metallography)

S/680/61/000/020/003/013  
D205/D302

AUTHORS: Layner, D. I. and Krupnikova-Perlina, Ye. I.

TITLE: On the oxidation mechanism of copper at high temperatures

SOURCE: Moscow. Gosudarstvennyy nauchno-issledovatel'skiy i projektnyy institut obrabotki tsvetnykh metallov. Sbornik nauchnykh trudov. no. 20, 1961. Metallovedeniye i obrabotka tsvetnykh metallov i splavov, 20-27

TEXT: This work was performed to verify the opinions of M. T. Mishchenko and R. R. Gorain of the L'vov Polytechnic Institute. 99.996% pure Cu samples 0.75 x 24 x 100 mm were subjected to oxidation at 1000°C over 5, 10, 15, 20 and 30 hours, by air at atmospheric pressure. Examination of the samples after various times of oxidation leads to the following picture of the mechanism: The oxidation takes place by diffusion of Cu across the product  $\text{Cu}_2\text{O}$  layer. It can be assumed that the formation of elongated  $\text{Cu}_2\text{O}$

Card 1/2

On the oxidation mechanism ...

S/680/61/000/020/003/013  
D205/D302

crystals is the outcome of this diffusion. Grain growth, cracks and imperfections develop across the grain boundaries and permit the access of oxygen to the remaining metal. Small polyhedral  $\text{Cu}_2\text{O}$  crystals are formed. At a given moment, this second mechanism may become prevalent. There are 6 figures and 17 references: 13 Soviet-bloc and 4 non-Soviet-bloc. The reference to the English-language publication reads as follows: Moore and Selicson, J. of Chem. Phys., v. 19, no. 12 (1951).

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Card 2/2

LAYNER, D.I.; TIKHONOV, B.S.; KRUPNIKOVA-PERLINA, Ye.I.; AGAFONOVA, A.V.

Investigations in the field of improving service characteristics  
of zinc for printing purposes. Trudy Giprotsetmetobrabotka  
no.20:97-103 '61. (MIRA 15:2)

(Zinc—Metallurgy)



LAYNER, D.I.; KRUPNIKOVA-PERLINA, Ye.I.

Copper deformation texture produced by rolling. Trudy  
Giprotsetmetobrabotka no.20:159-166 '61. (MIRA 15:2)  
(Copper—Metallography)

4469

S/136/62/000/011/001/002  
E021/E435

18.5100  
18.1700

AUTHORS:

Layner, D.I., Solov'yev, V.Ya.,  
Krupnikova-Perlina, Ye.I., Kachur, Ye.V.

TITLE:

Study of the deformation texture of rolled niobium

PERIODICAL: Tsvetnyye metally, no.11, 1962, 80-85

TEXT: The main orientations in rolled niobium and the influence of the degree of deformation and the effect of some impurities on the texture of the deformation were studied. Niobium prepared by both the carbon-thermal and the sodium-thermal methods was used. Some of the niobium was vacuum-sintered at 2300°C in the form of bars 20 x 20 x 600 mm, some was remelted in a vacuum-arc furnace to 70 mm diameter bars and some was remelted in an electron-beam furnace to 80 mm diameter bars. Some of the bars were forged and then cold rolled with intermediate annealing; the total deformation was 83%. The deformation texture was then compared for the different starting materials which contained different amounts of impurities (O<sub>2</sub> - 0.152 and 0.083, N<sub>2</sub> - 0.04 and 0.1, C - 0.04 and 0.07, Si - 0.012 and 0.003 for sodium-and carbon-thermal methods respectively). The influence of the melting

Card 1/2

S/136/62/000/G11/001/002  
E021/E435

Study of the deformation ...

procedure on the texture of rolled material was studied on niobium prepared by the sodium-thermal process after 95% deformation. The texture was determined from pole-figures constructed for (110) and (200) faces. Results: The technological processes involved in the preparation of niobium had no effect on the formation of the deformation texture. An increase in degree of deformation during the final rolling was accompanied by an increase in the degree of perfection of the texture of rolling. Within the investigated limits, the content of the impurities oxygen, nitrogen and carbon had no influence on the type or the degree of perfection of the texture. The main axes of the deformation texture of rolled niobium were (112) [110] + (100) [110]. There are 6 figures and 3 tables.

Card 2/2

S/032/62/028/006/015/025  
B101/B138

AUTHORS:

Layner, D. I., Krupnikova, Ye. I., and Bay, A. S.

TITLE:

Electron microscopic determination of the preponderant orientation of polycrystalline materials

PERIODICAL:

Zavodskaya laboratoriya, v. 28, no. 6, 1962, 703 - 705

TEXT: A report is given on the determination of the texture of polycrystalline materials by electron microscopic recording of etching figures. Coppernickel 80/20, annealed copper and  $\text{Cu}_2\text{O}$ , obtained by oxidation of Cu at 1020°C and quenching in water, were investigated. Etching of copper-nickel was carried out in a mixture of 50% acetic acid and 50% nitric acid, etching of Cu in 50%  $\text{HNO}_3$ , and of  $\text{Cu}_2\text{O}$  in 10 - 15%  $\text{HNO}_3$ . The etching figures were investigated with an EM-3 (EM-3) electron microscope using carbon replicas. The results agreed well with the data obtained from X-ray recordings of the pole figures. Results: (1) Annealed coppernickel deformed by 96% showed two types of etching figures, narrow grooves corresponding to the orientation (110), and lamellas with jagged edges,

Card 1/2

APPROVED FOR RELEASE

Electron microscopic determination...

S/032/62/028/006/015/025  
B101/B138

corresponding to the orientation (112). (2)  $\text{Cu}_2\text{O}$  showed the etching figures characteristic for (110). (3) Recrystallization of the copper could be traced by observing the etching figures. Cu samples deformed by 96% were annealed at 600°C for 1 sec, 10 min or 1 hr. The orientations (110), (001), and (112) were observed after 1 sec. After 10 min, the number of orientations was reduced to two: (110) and (001), and after 1 hr, only one orientation was left: (001). There are 5 figures.

ASSOCIATION: Gosudarstvennyy nauchno-issledovatel'skiy i proyektnyy institut po obrabotke tsvetnykh metallov (State Design and Planning Scientific Research Institute for the Processing of Nonferrous Metals)

Card 2/2